

ST. LAWRENCE HIGH SCHOOL A JESUIT CHRISTIAN MINORITY INSTITUTION



Subject : PHYSICS

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CLASS : XIIDate : 9.6.20Chapter : Current ElectricityTopic : Current, ohm's law, resistance, conductance, temp. dependence of R, series and parallel combination of R.Multiple Choice Question : $1 \times 15 = 15$

1. The current in a conductor varies with time t as $I = 2t + 3t^2$, where I is in ampere and t in second. Electric charge flowing through a section of the conductor during t = 2 s to t = 3 s is

(a) 10 C	(b) 24 C	(c) 33 C	(d) 44 C
Ans : (b) 24 C			

2. Which of the following graphs represents the variation of current (I) through a metallic conductor with its terminal potential difference (V)?



3. The dimension of resistance is

(a) $ML^2T^{-3}I^{-1}$	(b) $ML^2T^{-1}I^{-1}$	(c) $ML^2T^{-3}I^{-2}$	(d) $ML^2T^{-1}I^{-2}$
Ans. : (c) $ML^2T^{-3}I^{-2}$			

4. Resistivity of copper is 1.76 x $10^{-6} \Omega$ cm. What will be the resistnce between two opposite faces of a copper cube of side 1 m?

(a) $1.76 \ge 10^{-4} \Omega$ (b) $1.76 \ge 10^{-6} \Omega$ (c) $1.76 \ge 10^{-8} \Omega$ (d) $1.76 \ge 10^{-12} \Omega$ Ans. : (c) $1.76 \ge 10^{-8} \Omega$ 5. A wire of resistance 4_{Ω} is bent through 180° at its mid point and the two halves are twisted together. Then the resistance is

(a) 1_{Ω} (b) 2_{Ω} (c) 5_{Ω} (d) 8_{Ω} Ans. : (a) 1_{Ω}

- 6. The resistance of a wire is 5_{Ω} at $50^{\circ}C$ and 6_{Ω} at $100^{\circ}C$. The resistance of the wire at $0^{\circ}C$ will be (a) 1_{Ω} (b) 2_{Ω} (c) 3_{Ω} (d) 4_{Ω} Ans. : (d) 4_{Ω}
- 7. The temperature coefficient of resistance of a metal is $0.004^{\circ}C^{-1}$. If a wire of this metal has resistance 1_{Ω} at $0^{\circ}C$ then what will be the value of that resistance at $100^{\circ}C$?
 - (a) 0.6_{Ω} (b) 0.96_{Ω} (c) 1.04_{Ω} (d) 1.4_{Ω} Ans. : (d) 1.4_{Ω}
- 8. If three resistances, connected in series, are related as $R_1 > R_2 > R_3$, then what is the relation between the currents flowing through them?

(a)
$$I_1 = I_2 = I_3$$
 (b) $I_1 > I_2 > I_3$ (c) $I_1 < I_2 < I_3$ (d) $I_1 > I_3 > I_2$
Ans. : (a) $I_1 = I_2 = I_3$

9. Two resistances of 6 $_{\Omega}$ and 3 $_{\Omega}$ are connected in parallel and this combination is connected to a battery of emf 2 *V*. What will be the current flowing through the 6 ohm resistance?

(a)
$$\frac{1}{3}A$$
 (b) $\frac{2}{3}A$ (c) 1 A (d) 2 A
Ans. : (a) $\frac{1}{3}A$

10. A uniform metal wire of resistance R is stretched to twice its length. Now this wire is halved, and the two halves are connected in parallel. The equivalent resistance is

(a)
$$\frac{R}{2}$$
 (b) R (c) 2R (d) 4R

- Ans. : (b) *R*
- 11. The equivalent resistance between the points A and B is



Ans. : (b) 4_{Ω}

12. The resistance across A and B in the Fig. below will be



Ans. : (c) $\frac{R}{3}$

- 13. A set of n identical resistors, each of resistance R ohm when connected in series, has effective resistance X ohm and when connected in parallel the effective resistance is Y ohm. The relation between R, X and Y is given by
- (b) $R = Y\sqrt{X}$ (a) $R = \sqrt{XY}$ (c) $R = X\sqrt{Y}$ (d) $\sqrt{R} = XY$ Ans. : (a) $R = \sqrt{XY}$ 14. In which material, electric currents develop when an electric field is applied? (b) Wooden piece (a) Conductor (c) Non-conductor (d) Insulator Ans. : (a) Conductor 15. A wire is stretched so as to change its diameter by 0.25%. The percentage change in resistance is (b) 2.0% (d) 0.5% (a) 4.0% (c) 1.0%

Ans. : (c) 1.0%

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